Fundamentals of a computer system

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Summary

* A computer is an electronic device which accepts or collects data, processes them according to the instructions given and produces desired output.
* Characteristics of a computer are
  + speed,
  + accuracy,
  + efficiency,
  + versatility
  + storing and retrieving ability.
* Classification of computers
* According to size - Super Computers, Mainframe computers, Mini computers Personal Computers / Micro Computers / Mini Computers
* According to technology - Analogue Computers, Digital Computers, Hybrid Computers
* Basic components of a computer
  + Input devices
  + Output devices
  + Central Processing Unit : Arithmetic and Logical Unit (ALU), Control Unit, Memory Registers
  + Primary Memory / Main Memory
  + Secondary storage
* External devices are connected to a computer through ports.
* Basic components of data transmission are sender/source, media, receiver/ destination.
* Modes of data transmission
  + Simplex–mode
  + Half–duplex mode
  + Full muplex mode
  + Data transmission medium
    - There are two types – guided and unguided / wireless
* Connectivity devices such as switches, routers, modems are necessary to build a network.
* Types of computer networks
  + LAN
  + MAN
  + WAN
* Computer network topology includes
  + Star topology
  + Bus topology
  + Ring topology
  + Tree topology
  + Mesh topology
* There are advantages as well as disadvantages of computer networking.

Notes

Certainly! Here's a more detailed explanation for each point:

1. \*\*Definition of a Computer:\*\*

A computer is an electronic device that accepts and processes data according to given instructions, ultimately generating the desired output.

2. \*\*Characteristics of a Computer:\*\*

- \*\*Speed:\*\* Computers process data quickly.

- \*\*Accuracy:\*\* They provide precise results.

- \*\*Efficiency:\*\* Computers perform tasks effectively.

- \*\*Versatility:\*\* Capable of handling various types of tasks.

- \*\*Storing and Retrieving Ability:\*\* Computers can store and retrieve data efficiently.

3. \*\*Classification of Computers:\*\*

- \*\*By Size:\*\*

- \*\*Super Computers:\*\* Extremely powerful, used for complex calculations.

- \*\*Mainframe Computers:\*\* Large-scale data processing for organizations.

- \*\*Mini Computers:\*\* Mid-sized, suitable for smaller organizations.

- \*\*Personal/Micro Computers/Mini Computers:\*\* Desktops, laptops, etc., for individual use.

- \*\*By Technology:\*\*

- \*\*Analogue Computers:\*\* Process continuous data.

- \*\*Digital Computers:\*\* Process discrete data.

- \*\*Hybrid Computers:\*\* Combine aspects of both analogue and digital.

4. \*\*Basic Components of a Computer:\*\*

- \*\*Input Devices:\*\* Receive data (e.g., keyboard, mouse).

- \*\*Output Devices:\*\* Display processed information (e.g., monitor, printer).

- \*\*Central Processing Unit (CPU):\*\*

- \*\*ALU (Arithmetic and Logical Unit):\*\* Performs mathematical and logical operations.

- \*\*Control Unit:\*\* Manages and controls operations.

- \*\*Memory Registers:\*\* Temporary storage for data being processed.

- \*\*Primary Memory/Main Memory:\*\* Immediate storage for running processes.

- \*\*Secondary Storage:\*\* Long-term storage (e.g., hard drives, SSDs).

5. \*\*External Devices and Ports:\*\*

- External devices connect to a computer through ports (e.g., USB, HDMI).

6. \*\*Data Transmission Components:\*\*

- Sender/Source, Media, Receiver/Destination.

7. \*\*Modes of Data Transmission:\*\*

- \*\*Simplex-Mode:\*\* Unidirectional transmission (one-way).

- \*\*Half-Duplex Mode:\*\* Bidirectional, but not simultaneously.

- \*\*Full-Duplex Mode:\*\* Bidirectional and simultaneous.

8. \*\*Data Transmission Medium:\*\*

- Two types: Guided (through physical channels like cables) and Unguided/Wireless.

9. \*\*Connectivity Devices for Networks:\*\*

- Switches, routers, modems are essential for building computer networks.

10. \*\*Types of Computer Networks:\*\*

- \*\*LAN (Local Area Network):\*\* Limited geographical area.

- \*\*MAN (Metropolitan Area Network):\*\* Larger than LAN, city-wide.

- \*\*WAN (Wide Area Network):\*\* Spans a large geographical area.

11. \*\*Computer Network Topology:\*\*

- \*\*Star Topology, Bus Topology, Ring Topology, Tree Topology, Mesh Topology.\*\*

12. \*\*Advantages and Disadvantages of Computer Networking:\*\*

- Benefits include resource sharing, communication efficiency.

- Drawbacks can include security concerns and maintenance challenges.

These comprehensive notes cover the fundamental aspects of computers, their classifications, components, data transmission, network types, topologies, and the pros and cons of computer networking.

Certainly! Here are 10 multiple-choice questions (MCQs) based on the provided notes:

1. \*\*What is the primary function of a computer?\*\*

- A. Storing data

- B. Processing data

- C. Retrieving data

- D. Displaying data

2. \*\*Which characteristic of a computer refers to its ability to perform tasks without errors?\*\*

- A. Speed

- B. Accuracy

- C. Efficiency

- D. Versatility

3. \*\*Which type of computer is suitable for complex calculations and simulations?\*\*

- A. Personal Computer

- B. Mainframe Computer

- C. Mini Computer

- D. Super Computer

4. \*\*What is the primary purpose of the ALU (Arithmetic and Logical Unit) in a CPU?\*\*

- A. Managing control operations

- B. Temporary storage of data

- C. Performing mathematical and logical operations

- D. Displaying output

5. \*\*Which type of transmission mode allows data to flow in both directions but not simultaneously?\*\*

- A. Simplex-Mode

- B. Half-Duplex Mode

- C. Full-Duplex Mode

- D. Hybrid Mode

6. \*\*What is the main function of switches, routers, and modems in a computer network?\*\*

- A. Processing data

- B. Providing power

- C. Facilitating connectivity

- D. Storing data

7. \*\*Which network type covers a city-wide area?\*\*

- A. LAN (Local Area Network)

- B. MAN (Metropolitan Area Network)

- C. WAN (Wide Area Network)

- D. PAN (Personal Area Network)

8. \*\*In computer networking, what does LAN stand for?\*\*

- A. Local Access Network

- B. Long Area Network

- C. Local Area Network

- D. Logical Area Network

9. \*\*Which topology connects all devices to a central hub or switch?\*\*

- A. Bus Topology

- B. Ring Topology

- C. Mesh Topology

- D. Star Topology

10. \*\*What are the two types of data transmission mediums mentioned in the notes?\*\*

- A. Guided and Circular

- B. Wireless and Analog

- C. Guided and Wireless

- D. Digital and Hybrid

\*\*Answers:\*\*

1. B,
2. B,
3. D,
4. C,
5. B,
6. C,
7. B,
8. C,
9. D,
10. C

Certainly! Here are the fill-in-the-blank questions with four answer options each, along with the correct answers:

1. \*\*A computer is an electronic device that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ data, processes them according to the instructions given, and produces the desired output.\*\*

- A. Transmits

- B. Generates

- C. Accepts

- D. Encrypts

- \*\*Correct Answer: C. Accepts\*\*

2. \*\*The characteristics of a computer include speed, accuracy, efficiency, versatility, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ability.\*\*

- A. Analyzing

- B. Calculating

- C. Storing

- D. Retrieving

- \*\*Correct Answer: D. Retrieving\*\*

3. \*\*Classification of computers according to size includes Super Computers, Mainframe computers, Mini computers, and Personal/Micro Computers/Mini Computers. Another classification is based on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\*\*

- A. Performance

- B. Technology

- C. Color

- D. Shape

- \*\*Correct Answer: B. Technology\*\*

4. \*\*Basic components of a computer include input devices, output devices, Central Processing Unit (CPU), primary memory, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\*\*

- A. Peripheral devices

- B. External devices

- C. Secondary storage

- D. Power supply

- \*\*Correct Answer: C. Secondary storage\*\*

5. \*\*External devices are connected to a computer through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\*\*

- A. Cables

- B. Wires

- C. Ports

- D. Adapters

- \*\*Correct Answer: C. Ports\*\*

6. \*\*Modes of data transmission include simplex-mode, half-duplex mode, and full-duplex mode. Data transmission mediums are categorized into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and unguided/wireless.\*\*

- A. Wired

- B. Physical

- C. Guided

- D. Both C and A

- \*\*Correct Answer: D. Both C and A\*\*

7. \*\*Connectivity devices such as switches, routers, and modems are necessary to build a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\*\*

- A. Database

- B. Network

- C. Firewall

- D. Peripheral

- \*\*Correct Answer: B. Network\*\*

8. \*\*Types of computer networks include LAN, MAN, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\*\*

- A. WAN

- B. VPN

- C. WLAN

- D. PAN

- \*\*Correct Answer: A. WAN\*\*

9. \*\*Computer network topology includes star topology, bus topology, ring topology, tree topology, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\*\*

- A. Web topology

- B. Point-to-Point topology

- C. Mesh topology

- D. Hierarchical topology

- \*\*Correct Answer: C. Mesh topology\*\*

10. \*\*There are advantages as well as disadvantages of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\*\*

- A. Computer hardware

- B. Software development

- C. Internet usage

- D. Computer networking

- \*\*Correct Answer: D. Computer networking\*\*